

CHAPTER 13

HYDROCARBONS

Properties of alkynes:

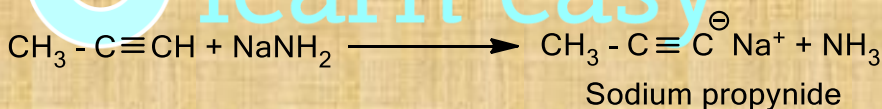
Physical properties:

- First three members are gases, next eight are liquids and higher ones are solids.
- Alkynes are colourless except ethyne other alkynes are odourless. Ethyne has characteristic odour.
- They are insoluble in water but soluble in organic solvents.
- Melting, boiling points increases with increase in molar mass.

Chemical properties:

Acidic nature:

Terminal alkynes possess acidic hydrogen. Hence they react with strong bases to release hydrogen.

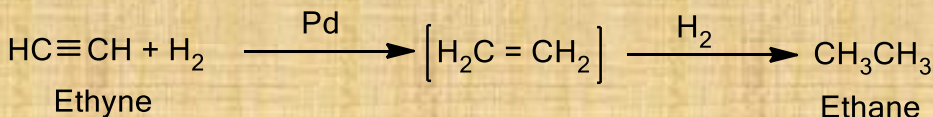


Addition reactions:

Alkynes add up, two molecules due to presence of triple bond.

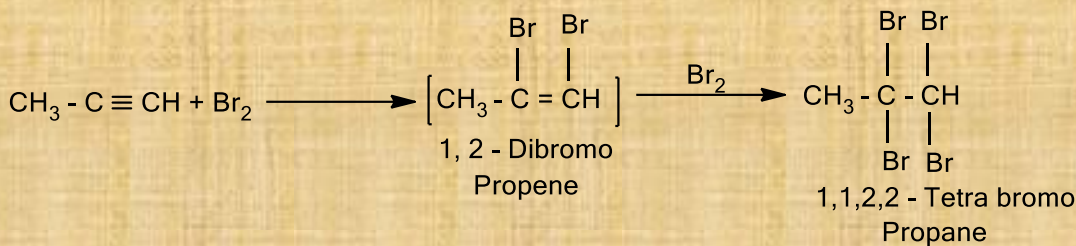
Addition of dihydrogen:

Alkynes get added by two molecules of hydrogen to give alkane.



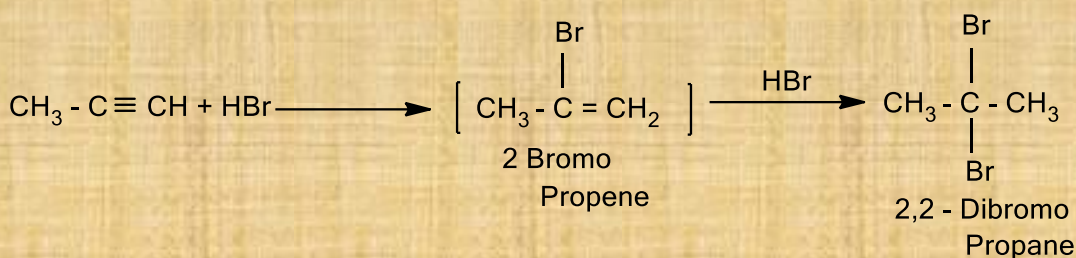
Addition of halogens:

Alkynes get added by two molecules of halogens to give tetra halo alkanes.



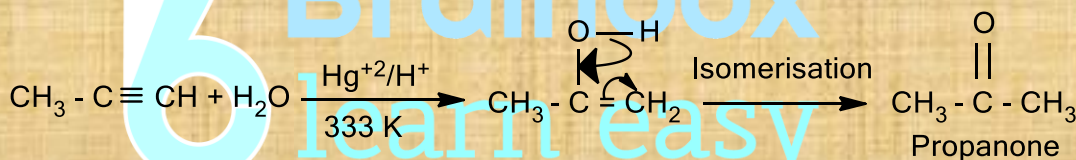
Addition of hydrogen halide:

Alkynes gets added by two molecules of hydrogen halides to give geminal dihalides.



Addition of water:

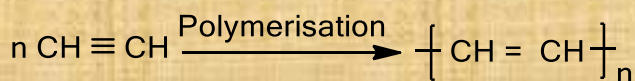
Alkynes added by one molecule of water in presence of acidified mercuric sulphate at 333K to form carbonyl compounds.



All addition reactions follow electrophilic addition.

Polymerisation:

a. Ethyne undergoes linear Polymerisation to give polyethyne.



b. Ethyne when passed through red hot iron tube at 873K undergoes cyclic Polymerisation to give benzene.

